

It is claimed:

1. A multi-priority re-sequencing method, comprising:

receiving data packets, each data packet having a priority indicator and a transmission sequence number, the priority indicator indicating a priority class of the data packet, and the transmission sequence number indicating a sequence of transmission for data packets of a same priority class; and

storing the data packets in buffers based on the priority indicators, each buffer associated with a different priority class; and

outputting the data packets in each buffer in sequence of transmission based on the transmission sequence number of the data packets.

2. The method of claim 1, wherein the outputting step comprises:

providing a counter for each priority class;

comparing, for each priority class, a counter value of the associated counter with the transmission sequence numbers of the data packets stored in the associated buffer;

outputting, based on the comparison, a data packet having the same transmission sequence number as the count value;

incrementing the count value when the outputting step outputs a data packet; and

repeating the comparing, outputting and incrementing steps.

3. A multi-priority re-sequencing method, comprising:

receiving data packets, each data packet having a priority indicator and a transmission sequence number, the priority indicator indicating a

priority class of the data packet, and the transmission sequence number indicating a sequence of transmission for the data packets; and

storing the data packets in a single buffer; and

outputting the data packets from the buffer in sequence of transmission based on the transmission sequence number of the data packets.

4. The method of claim 3, wherein the transmission sequence numbers are not associated with the priority class of the data packets.

5. The method of claim 3, wherein the outputting step comprises:

providing a counter;

comparing a counter value of the counter with the transmission sequence numbers of the data packets stored in the buffer;

outputting, based on the comparison, a data packet having the same transmission sequence number as the count value;

incrementing the count value when the outputting step outputs a data packet; and

repeating the comparing, outputting and incrementing steps.

6. A multi-priority re-sequencing method, comprising:

receiving data packets, each data packet having a priority indicator and a transmission sequence number, the priority indicator indicating a priority class of the data packet, and the transmission sequence number indicating a sequence of transmission for data packets of a same priority class; and

storing the data packets in a single buffer; and

outputting the data packets from the buffer in sequence of transmission based on the transmission sequence number and the priority indicator of the data packets.

7. The method of claim 6, wherein the buffer is a random access memory.

8. The method of claim 6, wherein the outputting step outputs the data packets of the same priority class in sequence of transmission regardless of the transmission sequence numbers of the data packets of other priority classes.

9. The method of claim 1, wherein the outputting step comprises:

providing a counter for each priority class;

comparing, for each priority class, a counter value of the associated counter with the transmission sequence numbers of the data packets stored in the associated buffer;

outputting, based on the comparison, a data packet having the same transmission sequence number as the count value;

incrementing the count value when the outputting step outputs a data packet; and

repeating the comparing, outputting and incrementing steps.

10. A multi-priority re-sequencing apparatus, comprising:

a receiver receiving data packets, each data packet having a priority indicator and a transmission sequence number, the priority indicator indicating a priority class of the data packet, and the transmission sequence number indicating a sequence of transmission for data packets of a same priority class; and

a buffer associated with each priority class;

a parser parsing the received data packets into one of the buffers based on the priority class indicator of the received data packets; and

control logic instructing the buffers to output data packets in sequence based on the transmission sequence numbers of the data packets stored therein.

11. The apparatus of claim 10, wherein the control logic comprises:

a counter for each priority class; and wherein

the control logic, for each priority class, compares a counter value of the associated counter with the transmission sequence numbers of the data packets stored in the associated buffer; instructs, based on the comparison, the associated buffer to a output data packet having the same transmission sequence number as the count value; increments the count value when a data packet is output; and repeats the comparing, outputting and incrementing process.

12. A multi-priority re-sequencing apparatus, comprising:

a receiver receiving data packets, each data packet having a priority indicator and a transmission sequence number, the priority indicator indicating a priority class of the data packet, and the transmission sequence number indicating a sequence of transmission for the data packets; and

a single buffer storing the data packets; and

control logic instructing the buffer to output the data packets in sequence based on the transmission sequence numbers of the data packets.

13. The apparatus of claim 12, wherein the transmission sequence numbers are not associated with the priority class of the data packets.

14. The apparatus of claim 12, wherein the control logic comprises:

a counter; and wherein

the control logic compares a counter value of the counter with the transmission sequence numbers of the data packets stored in the buffer; instructs, based on the comparison, the buffer to output a data packet having the same transmission sequence number as the count value; increments the count value when a data packet is output; and repeats the comparing, outputting and incrementing process.

15. A multi-priority re-sequencing apparatus, comprising:

a receiver receiving data packets, each data packet having a priority indicator and a transmission sequence number, the priority indicator indicating a priority class of the data packet, and the transmission sequence number indicating a sequence of transmission for data packets of a same priority class; and

a single buffer storing the received data packets; and

control logic instructing the buffer to output the data packets in sequence based on the transmission sequence number and the priority indicator of the data packets.

16. The apparatus of claim 15, wherein the buffer is a random access memory.

17. The apparatus of claim 15, wherein the control logic instructs the buffer to output the data packets of the same priority class in sequence regardless of the transmission sequence numbers of the data packets of other priority classes.

18. The apparatus of claim 15, wherein the control logic comprises:

a counter for each priority class; and wherein

the control logic, for each priority class, compares a counter value of the associated counter with the transmission sequence numbers of the data packets stored in the associated buffer; instructs, based on the comparison, the associated buffer to a output data packet having the same transmission sequence number as the count value; increments the count value when a data packet is output; and repeats the comparing, outputting and incrementing process.